<110> J. Turck
      J. Archer

<120> CONTROL OF GENE EXPRESSION IN EUKARYOTES

<130> 9341-021

<140> To be assigned
<141> 1999-12-22

<150> UK 9828660.2
<151> 1998-12-24

<160> 19

<170> PatentIn Ver. 2.1

<210> 1
<211> 7599
<212> DNA
<213> Rhodococcus sp.

<220>
<221> CDS
<222> (295)..(1035)
<223> ohpR regulator

<220>
<221> CDS
<222> (1261)..(2805)
<223> ohpA transport

<220>
<221> CDS
<222> (2807)..(4720)
<223> ohpB monooxygenase

<220>
<221> CDS
<222> (5721)..(6665)
<223> ohpD catechol 2,3-dioxygenase

<220>
<221> CDS
<222> ()..)

<400> 1
gaattccatg ttcttctcct tgcatgtggc ccgcgttgcc gagggcactg   50

g ctcggcctgt cgcccgcaga gggcgcatgt ccgggtgcct ggatatggcg   101

cgtacggcgt gccctccggc gttaaccccg aggttggcca cgatgccccg gccatcaggt 161

ctggaatgct agcgttccag acgaaggtaa cccacagtga ctcacaccac aagtactaga 221

```
atgcaagctg ttgcggtgag cgccgcggca taaggggggag ccatgtccgg gacgccgacg 281

, gaaagcctga ctcg atg acc acc acc gac acc ggc ccc aag ccg ggc agt   331
              Met Thr Thr Thr Asp Thr Gly Pro Lys Pro Gly Ser
              1               5                       10


gag gcc gcc gcc ctg ctc gcc aat gtc cgc acc tcg ggg gcg cgg ctg   379
Glu Ala Ala Ala Leu Leu Ala Asn Val Arg Thr Ser Gly Ala Arg Leu
        15              20                      25

tcc tcc gcg ttg tac gac att ctg aag aac cgg ctg ctc gaa ggg cgc   427
Ser Ser Ala Leu Tyr Asp Ile Leu Lys Asn Arg Leu Leu Glu Gly Arg
        30              35                      40

tat gcg gca ggc gag aag atc gtc gtc gag tcg atc cgg caa gag ttc   475
Tyr Ala Ala Gly Glu Lys Ile Val Val Glu Ser Ile Arg Gln Glu Phe
45              50                      55                      60

ggg gtg agc aag cag ccc gtc atg gac gct ctg cgc cgc ctg tcc agc   523
Gly Val Ser Lys Gln Pro Val Met Asp Ala Leu Arg Arg Leu Ser Ser
                65                      70                      75

gac aag ctg gtc cac atc gtt ccc cag gtc ggt tgc gag gtc gtc tcc   571
Asp Lys Leu Val His Ile Val Pro Gln Val Gly Cys Glu Val Val Ser
            80                      85                      90

tac gcc ccg cgc gaa gtg gaa gac ttc tac acc ctg ttc ggc ggt ttc   619
Tyr Ala Pro Arg Glu Val Glu Asp Phe Tyr Thr Leu Phe Gly Gly Phe
        95                      100                     105

gaa ggg acc atc gcc gcg gta gcg gcc tcc cgg cgg acc gag gcc cag   667
Glu Gly Thr Ile Ala Ala Val Ala Ala Ser Arg Arg Thr Glu Ala Gln
110                     115                     120

ttg ctg gag ctg gac ctg atc tcg gcg cgg gtc gac gcc ctg atc acc   715
Leu Leu Glu Leu Asp Leu Ile Ser Ala Arg Val Asp Ala Leu Ile Thr
125                     130                     135                 140

tcc cac gac ccg gtg gtc cgc gcc cgc ggg tac cgc gtg cac aac cgg   763
Ser His Asp Pro Val Val Arg Ala Arg Gly Tyr Arg Val His Asn Arg
                145                     150                     155

gag ttc cat gcg gcc atc cac gcg atg gcg cac tcg cgg atc atg gag   811
Glu Phe His Ala Ala Ile His Ala Met Ala His Ser Arg Ile Met Glu
            160                     165                     170

gag acc agc cag cga atg tgg gat ctg tcg gac ttc ttg atc aac acc   859
Glu Thr Ser Gln Arg Met Trp Asp Leu Ser Asp Phe Leu Ile Asn Thr
            175                     180                     185

acc ggc atc acc aac ccg ctc tcg agc gca ctg ccc gac cgg cag cat   907
Thr Gly Ile Thr Asn Pro Leu Ser Ser Ala Leu Pro Asp Arg Gln His
        190                     195                     200
```

2

```
gac cac cac gaa atc acc gag gcc atc cgc aac cgt gac gca gct gcc      955
Asp His His Glu Ile Thr Glu Ala Ile Arg Asn Arg Asp Ala Ala Ala
205             210             215             220

gcc cgc gag gcc atg gaa cgc cac atc gtc ggc acc atc gca gta atc     1003
Ala Arg Glu Ala Met Glu Arg His Ile Val Gly Thr Ile Ala Val Ile
        225             230             235

cgc gac gaa tcc aac gcc cag ctg ccg agc tag accccgatac ccgggccatc  1056
Arg Asp Glu Ser Asn Ala Gln Leu Pro Ser
        240             245

gaccggctcc gctatcgcgc cacctacgcc gaggggggac tctcggccgt agcgctgcag  1116

acgatccacc ggcaccctcc acgctgaccc ctgtctcgcc ctagagggcc ggcgcgccgt  1176

cgatcacctt taccctcatc cagagacttg cgtcaccctc tatgcccgag tagcgtctga  1236

actagacgtc tagcattcta gttga gtg ctc cct ctc gaa gat tct cca gag    1288
                             Val Leu Pro Leu Glu Asp Ser Pro Glu
                                     250             255

aac ccc tct cga aca tcc cca gaa gaa agg agc ggc cat gac gac cgc    1336
Asn Pro Ser Arg Thr Ser Pro Glu Glu Arg Ser Gly His Asp Asp Arg
                260             265             270

ttc gca cgc atc gtc ctt cgg ggc acg agc cca ctt ccg ccc aca gat    1384
Phe Ala Arg Ile Val Leu Arg Gly Thr Ser Pro Leu Pro Pro Thr Asp
        275             280             285

cgg gga agc ccg acc gtg agc acc aca cct acc tcc ccg acg aag acc    1432
Arg Gly Ser Pro Thr Val Ser Thr Thr Pro Thr Ser Pro Thr Lys Thr
290             295             300

tca ccg ctg cgg gta gcg atg gcc agc ttc atc ggt acc acc gtc gag    1480
Ser Pro Leu Arg Val Ala Met Ala Ser Phe Ile Gly Thr Thr Val Glu
305             310             315             320

tac tac gac ttc ttc atc tac ggc acc gcg gcc gcg ctg gta ttc cct    1528
Tyr Tyr Asp Phe Phe Ile Tyr Gly Thr Ala Ala Leu Val Phe Pro
                325             330             335

gag ttg ttc ttc ccg gat gtc tcg tcc gcg atc gga atc ctg ttg tcg    1576
Glu Leu Phe Phe Pro Asp Val Ser Ser Ala Ile Gly Ile Leu Leu Ser
        340             345             350

ttc gcg acc ttc agc gtt ggg ttc ctc gcc cgc ccg ctg ggt ggc ata    1624
Phe Ala Thr Phe Ser Val Gly Phe Leu Ala Arg Pro Leu Gly Gly Ile
        355             360             365

gtg ttc ggg cac ttc ggt gac cgg gtc ggc cgc aag cag atg ctg gtg    1672
Val Phe Gly His Phe Gly Asp Arg Val Gly Arg Lys Gln Met Leu Val
370             375             380

atc tcc ctg gtc gga atg ggc tcg gcc acc gta ctg atg gga ttg ttg    1720
Ile Ser Leu Val Gly Met Gly Ser Ala Thr Val Leu Met Gly Leu Leu
385             390             395             400
```

3

```
ccc ggt tac gcc caa atc ggg atc gcc gcc ccc atc ctg ctg acc ctg      1768
Pro Gly Tyr Ala Gln Ile Gly Ile Ala Ala Pro Ile Leu Leu Thr Leu
            405                     410                     415

ctg cgc ctg gtg cag ggc ttt gcc gtc ggc ggc gag tgg ggt gga gcc      1816
Leu Arg Leu Val Gln Gly Phe Ala Val Gly Gly Glu Trp Gly Gly Ala
            420                     425                     430

acc ctg atg gcc gtc gag cac gcc ccc acc gcg aag aag ggc ttt ttc      1864
Thr Leu Met Ala Val Glu His Ala Pro Thr Ala Lys Lys Gly Phe Phe
            435                     440                     445

gga tcc ttc tcc cag atg ggg gca ccc gcc ggg acc agc gtc gca acc      1912
Gly Ser Phe Ser Gln Met Gly Ala Pro Ala Gly Thr Ser Val Ala Thr
        450                     455                     460

ctg gcg ttc ttc gcg gtc tcc caa ttg ccc gac gag cag ttc ctg agt      1960
Leu Ala Phe Phe Ala Val Ser Gln Leu Pro Asp Glu Gln Phe Leu Ser
465                     470                     475                 480

tgg ggc tgg cga ctg ccg ttc ctg ttc agc gcg gtg ctg atc gtg atc      2008
Trp Gly Trp Arg Leu Pro Phe Leu Phe Ser Ala Val Leu Ile Val Ile
                485                     490                     495

ggg ctg ttc att cgc ctg tcc ctg gcc gaa agc ccc gac ttc gcc gag      2056
Gly Leu Phe Ile Arg Leu Ser Leu Ala Glu Ser Pro Asp Phe Ala Glu
            500                     505                     510

gtg aag gca cag agc gcc gtg gtg cga atg ccg atc gcc gaa gcg ttc      2104
Val Lys Ala Gln Ser Ala Val Val Arg Met Pro Ile Ala Glu Ala Phe
            515                     520                     525

cgc aag cac tgg aag gaa att ctc ctc atc gcg ggc acc tac ctg tcc      2152
Arg Lys His Trp Lys Glu Ile Leu Leu Ile Ala Gly Thr Tyr Leu Ser
        530                     535                     540

caa gga gtg ttc gcc tat atc tgc atg gcc tac ctc gtc tcc tac ggc      2200
Gln Gly Val Phe Ala Tyr Ile Cys Met Ala Tyr Leu Val Ser Tyr Gly
545                     550                     555                 560

acc acc gtc gcg ggg atc agc cgc acc ttc gcc ctg gcc gga gta ttc      2248
Thr Thr Val Ala Gly Ile Ser Arg Thr Phe Ala Leu Ala Gly Val Phe
                565                     570                     575

gtc gcc ggc atc gtc gcc gtc ctc ctc tac ctc gtg ttc ggc gct ctg      2296
Val Ala Gly Ile Val Ala Val Leu Leu Tyr Leu Val Phe Gly Ala Leu
            580                     585                     590

tcc gac act ttc ggc cgc aag acc atg tac ctg ctc ggc gcc gcc gcg      2344
Ser Asp Thr Phe Gly Arg Lys Thr Met Tyr Leu Leu Gly Ala Ala Ala
        595                     600                     605

atg ggt gtg gtg atc gcc ccc gcc ttc gca ctg atc aac acc ggc aac      2392
Met Gly Val Val Ile Ala Pro Ala Phe Ala Leu Ile Asn Thr Gly Asn
610                     615                     620
```

4

```
ccg tgg ctg ttc atg gcc gcg cag gtg ctg gtc ttc gga att gca atg   2440
Pro Trp Leu Phe Met Ala Ala Gln Val Leu Val Phe Gly Ile Ala Met
625             630             635             640

gcc ccc gcc gcc ggc gtg aca ggc tcc ctg ttc acg atg gtc ttc gac   2488
Ala Pro Ala Ala Gly Val Thr Gly Ser Leu Phe Thr Met Val Phe Asp
                645   .             650             655

gcg gac gtg cgc tac agc ggt gtc tct atc ggc tac acc atc tcc cag   2536
Ala Asp Val Arg Tyr Ser Gly Val Ser Ile Gly Tyr Thr Ile Ser Gln
                660             665             670

gtc gcc ggc tcc gcg ttc gcc ccg acg atc gcg acc gcc ttg tac gcc   2584
Val Ala Gly Ser Ala Phe Ala Pro Thr Ile Ala Thr Ala Leu Tyr Ala
                675             680             685

tcc acc aac acc agc aac tcg atc gtg acc tac ctg ctg atc gtc tcg   2632
Ser Thr Asn Thr Ser Asn Ser Ile Val Thr Tyr Leu Leu Ile Val Ser
    690                 695             700

gcc atc tcg atc gtc tcg gtg atc ctg ctg ccc ggc ggc tgg ggg cgc   2680
Ala Ile Ser Ile Val Ser Val Ile Leu Leu Pro Gly Gly Trp Gly Arg
705             710             715             720

aag ggc gct gcg agc cag ctc act cgc gac cag gcc acc tcc aca ccg   2728
Lys Gly Ala Ala Ser Gln Leu Thr Arg Asp Gln Ala Thr Ser Thr Pro
                725             730             735

aaa atg cct gac acc gaa aca ttt tcg act cgg aca gtt ccg gac acc   2776
Lys Met Pro Asp Thr Glu Thr Phe Ser Thr Arg Thr Val Pro Asp Thr
                740             745             750

gca gca tcc ctg cgc gtc ctc gac aag tga a gtg atg aca gac atg agt 2825
Ala Ala Ser Leu Arg Val Leu Asp Lys       Val Met Thr Asp Met Ser
        755             760                     765

gac cac gac cgc acc tcc tac gac acc gac gtc gtg atc gtc ggc ctc   2873
Asp His Asp Arg Thr Ser Tyr Asp Thr Asp Val Val Ile Val Gly Leu
    770             775             780

ggc ccc gcc ggt ggc aca gcg gcg ctt gcc ctg gcc agc tac ggc atc   2921
Gly Pro Ala Gly Gly Thr Ala Ala Leu Ala Leu Ala Ser Tyr Gly Ile
785             790             795             800

cgc gtt cac gcc gtc tcg atg ttc ccc tgg gtg gcg aac tcg ccg cgc   2969
Arg Val His Ala Val Ser Met Phe Pro Trp Val Ala Asn Ser Pro Arg
                805             810             815

gcg cac atc acc aac cag cgc gcc gtc gaa gtg ctg cgt gac ctg ggc   3017
Ala His Ile Thr Asn Gln Arg Ala Val Glu Val Leu Arg Asp Leu Gly
        820             825             830

gtc gaa gac gag gcg cgc aac tac gcc acc ccg tgg gac cag atg ggc   3065
Val Glu Asp Glu Ala Arg Asn Tyr Ala Thr Pro Trp Asp Gln Met Gly
        835             840             845
```

```
gac acg ctg ttc acc acg agc ctg gcc ggc gag gag atc gtc cgg atg        3113
Asp Thr Leu Phe Thr Thr Ser Leu Ala Gly Glu Glu Ile Val Arg Met
    850                     855                 860

cag acc tgg ggt acg ggc gat atc cgc tac ggg gac tac ctg tcc gga        3161
Gln Thr Trp Gly Thr Gly Asp Ile Arg Tyr Gly Asp Tyr Leu Ser Gly
865                     870                 875                 880

agc ccc tgc acg atg ctc gac att ccg cag ccc ctg atg gag ccg gtg        3209
Ser Pro Cys Thr Met Leu Asp Ile Pro Gln Pro Leu Met Glu Pro Val
                885                 890                 895

ctg atc aag aac gcc gcc gaa cgt ggt gcg gtc atc agc ttc aac acc        3257
Leu Ile Lys Asn Ala Ala Glu Arg Gly Ala Val Ile Ser Phe Asn Thr
            900                 905                 910

gaa tac ctc gac cac gcc cag gac gag gac ggg gtg acc gtc cgg ttc        3305
Glu Tyr Leu Asp His Ala Gln Asp Glu Asp Gly Val Thr Val Arg Phe
            915                 920                 925

cgc gac gtc cgc tcg ggc acc gtg ttc acc cag cga gcc cgc ttc ctg        3353
Arg Asp Val Arg Ser Gly Thr Val Phe Thr Gln Arg Ala Arg Phe Leu
    930                 935                 940

ctc ggt ttc gac ggc gca cga tcg aag atc gcc gaa cag atc ggg ctt        3401
Leu Gly Phe Asp Gly Ala Arg Ser Lys Ile Ala Glu Gln Ile Gly Leu
945                 950                 955                 960

ccg ttc gaa ggt gaa ctc gcc cgc gcc ggt acc gcg tac atc ctg ttc        3449
Pro Phe Glu Gly Glu Leu Ala Arg Ala Gly Thr Ala Tyr Ile Leu Phe
                965                 970                 975

aac gcg gac ctg agc aaa tat gtc gct cat cgg ccg agc atc ttg cac        3497
Asn Ala Asp Leu Ser Lys Tyr Val Ala His Arg Pro Ser Ile Leu His
                980                 985                 990

tgg atc gtc aac tcg aag gcc ggt ttc ggt gag atc ggc atg ggt ctg        3545
Trp Ile Val Asn Ser Lys Ala Gly Phe Gly Glu Ile Gly Met Gly Leu
            995                 1000                1005

ctg cgc gcg atc cga ccg tgg gac cag tgg atc gcc ggc tgg ggc ttc        3593
Leu Arg Ala Ile Arg Pro Trp Asp Gln Trp Ile Ala Gly Trp Gly Phe
    1010                1015                1020

gac atg gcg aac ggc gag ccg gat gtc tcc gac gac gtt gtc ctc gaa        3641
Asp Met Ala Asn Gly Glu Pro Asp Val Ser Asp Asp Val Val Leu Glu
1025                1030                1035                1040

cag atc cgg acc ctc gtc ggc gac ccg cac ctg gac gtc gag atc gtg        3689
Gln Ile Arg Thr Leu Val Gly Asp Pro His Leu Asp Val Glu Ile Val
                1045                1050                1055

tcg agg tcc ttc tgg tac gtc aac cgg cag tgg gct gag cac tac cag        3737
Ser Arg Ser Phe Trp Tyr Val Asn Arg Gln Trp Ala Glu His Tyr Gln
            1060                1065                1070
```

```
tcc ggt cga gtg ttc tgc ggc ggc gac gcg gtg cac cgg cat ccg ccg      3785
Ser Gly Arg Val Phe Cys Gly Gly Asp Ala Val His Arg His Pro Pro
    1075                1080                1085

agc agc ggg ctg ggc tcg aac acg tcc atg cag gac gcg ttc aac ctg      3833
Ser Ser Gly Leu Gly Ser Asn Thr Ser Met Gln Asp Ala Phe Asn Leu
    1090                1095                1100

gca tgg aag atc gcg ttc gtc gtg aag ggg tat gca gga ccg ggt ctg      3881
Ala Trp Lys Ile Ala Phe Val Val Lys Gly Tyr Ala Gly Pro Gly Leu
1105                1110                1115                1120

ctc gag tcc tac tct cct gag cgt gtt ccg gtc ggc aaa cag atc gtc      3929
Leu Glu Ser Tyr Ser Pro Glu Arg Val Pro Val Gly Lys Gln Ile Val
                1125                1130                1135

gct cgc gcc aac cag tcc cgc aag gac tac gcc ggg ctg cgc gaa tgg      3977
Ala Arg Ala Asn Gln Ser Arg Lys Asp Tyr Ala Gly Leu Arg Glu Trp
                1140                1145                1150

ttc gat cac gag agc gac gac ccg gtc gcc gcc ggc ctg gca aag ttg      4025
Phe Asp His Glu Ser Asp Asp Pro Val Ala Ala Gly Leu Ala Lys Leu
                1155                1160                1165

aag gaa ccc tcg tcc gaa ggt gtt gct ctg cgt gag cgg ctg tac gag      4073
Lys Glu Pro Ser Ser Glu Gly Val Ala Leu Arg Glu Arg Leu Tyr Glu
    1170                1175                1180

gcg ctg gag gtg aag aac gcc gaa ttc aac gcc cag ggc gtc gaa ctc      4121
Ala Leu Glu Val Lys Asn Ala Glu Phe Asn Ala Gln Gly Val Glu Leu
1185                1190                1195                1200

aac cag cgc tac acc tcg tcc gcg gtc gtt ccc gac ccc gag gcg ggc      4169
Asn Gln Arg Tyr Thr Ser Ser Ala Val Val Pro Asp Pro Glu Ala Gly
                1205                1210                1215

gag gaa gtg tgg gtg cgc gat cgt gag ctg tac ctg cag gcc acc acc      4217
Glu Glu Val Trp Val Arg Asp Arg Glu Leu Tyr Leu Gln Ala Thr Thr
                1220                1225                1230

cgg ccg ggc gcg aag ctg ccg cat gcg tgg ctg gtc ggc gcc gac gga      4265
Arg Pro Gly Ala Lys Leu Pro His Ala Trp Leu Val Gly Ala Asp Gly
        1235                1240                1245

acc cgc atc tcc acc ctc gac gtc acc ggc aag gga atg atg acc ctg      4313
Thr Arg Ile Ser Thr Leu Asp Val Thr Gly Lys Gly Met Met Thr Leu
    1250                1255                1260

ctg acc gga ctc ggc ggc cag gca tgg aag cgt gcc gcc gcc aaa ctc      4361
Leu Thr Gly Leu Gly Gly Gln Ala Trp Lys Arg Ala Ala Ala Lys Leu
1265                1270                1275                1280

gac ctg ccg ttc ctg cgg acc gtc gtt gtc ggc gaa ccc ggc acc atc      4409
Asp Leu Pro Phe Leu Arg Thr Val Val Val Gly Glu Pro Gly Thr Ile
            1285                1290                1295
```

7

```
gac cct tac gga tac tgg cgg cgg gtc cgc gac atc gac gag gcc ggc        4457
Asp Pro Tyr Gly Tyr Trp Arg Arg Val Arg Asp Ile Asp Glu Ala Gly
        1300              1305              1310

gcc ctg ctc gtg cgg ccc gac ggc tac gtc gcg tgg cga cac agt gct        4505
Ala Leu Leu Val Arg Pro Asp Gly Tyr Val Ala Trp Arg His Ser Ala
        1315              1320              1325

ccg gtc tgg gac gac acc gaa gcg ctc acc agc ctc gag aac gct ctc        4553
Pro Val Trp Asp Asp Thr Glu Ala Leu Thr Ser Leu Glu Asn Ala Leu
        1330              1335              1340

acc gcg gtc ctc gac cac tcg gcc agc gac aac ggg aac ccg agc ggc        4601
Thr Ala Val Leu Asp His Ser Ala Ser Asp Asn Gly Asn Pro Ser Gly
1345              1350              1355              1360

aca aac gag ccg cag tac agc acc cgg gcc gtg ccg atc gtc gtt ccg        4649
Thr Asn Glu Pro Gln Tyr Ser Thr Arg Ala Val Pro Ile Val Val Pro
        1365              1370              1375

cac gtt acc gcc gag gat gca gca cca gct tcc gcc acc cgc acc acc        4697
His Val Thr Ala Glu Asp Ala Ala Pro Ala Ser Ala Thr Arg Thr Thr
        1380              1385              1390

aca gtc gag gga gag aac cga tga cccgtcctta caccagcgtc tgggacgacc     4751
Thr Val Glu Gly Glu Asn Arg
        1395              1400


tgaaccaggt cgagttcagc cagggattca tccaggccgg cccctaccgg acccgatacc     4811

tgcacgccgg cgattcgtcc aagcccacgc tgatcctgct gcacggcatc accggccacg     4871

ccgaggcgta cgtgcgcaat ctgcgctcgc attccgagca cttcaacgtc tgggcaatcg     4931

acttcatcgg ccacggctat tcgaccaagc ccgaccaccc gctcgagatc aagcactaca     4991

tcgaccacgt gctgcagttg ctggacgcca tcggcgtcga gaaggcctcg ttttccgggg     5051

agtctctcgg cggttgggtc accgcccagt tcgcgcacga ccatcccgag aaggtcgacc     5111

ggatcgtgct caacaccatg ggcggcacca tggccaaccc tcaggtgatg gaacgtctct     5171

ataccctgtc gatggaagcg gcgaaggacc cgagctggga acgcgtcaaa gcacgcctcg     5231

aatggctcat ggccgacccg accatggtca ccgacgacct gatccgcacc cgccaggcca     5291

tcttccagca gccggattgg ctcaaggcct gcgagatgaa catggcactg caggacctcg     5351

aaacccgcaa gcggaacatg atcaccgacg ccactctcaa cggcatcacg gtgcccgcga     5411

tggtgctgtg gaccaccaag gaccccttccg gtccggtcga cgaagccaag cgcatcgcct     5471

cccacatccc gggcgccaag ctggccatca tggagaactg tggccactgg ccccagtacg     5531

aggaccccga gaccttcaac aagctgcatc tggacttcct cctcggtcgc agctgacaca     5591

gaccccggcc ggtgccgcca accctgcaa cccgggcggc accggccgga tctcacttac     5651
```

8

ccgacctatt gcgctctcgt ccggacccccc ggagagaaag cgccgaagca gcagcaagga 5711

gaccgccgcg atg cct gta gcg ctg tgc gcg atg tcg cac tcc ccc ctg   5760
          Met Pro Val Ala Leu Cys Ala Met Ser His Ser Pro Leu
                        1405   1410

atg gga cgc aac gac ccc gaa cag gaa gtc atc gac gcc gtc gac gcc   5808
Met Gly Arg Asn Asp Pro Glu Gln Glu Val Ile Asp Ala Val Asp Ala
    1415   1420   1425

gca ttc gac cac gcg cgc cgg ttc gtc gcc gac ttc gcc ccc gat ctc   5856
Ala Phe Asp His Ala Arg Arg Phe Val Ala Asp Phe Ala Pro Asp Leu
1430   1435   1440   1445

atc gtc atc ttc gcc ccc gac cac tac aac ggc gtc ttc tac gac ctg   5904
Ile Val Ile Phe Ala Pro Asp His Tyr Asn Gly Val Phe Tyr Asp Leu
            1450   1455   1460

ctg ccg ccg ttc tgt atc ggt gcc gcc gcg cag tcc gtc ggc gac tac   5952
Leu Pro Pro Phe Cys Ile Gly Ala Ala Ala Gln Ser Val Gly Asp Tyr
            1465   1470   1475

ggc acc gaa gcc ggc cct ctc gac gtc gac cgt gac gcc gcc tac gca   6000
Gly Thr Glu Ala Gly Pro Leu Asp Val Asp Arg Asp Ala Ala Tyr Ala
    1480   1485   1490

gtc gcc cgc gac gtc ctc gac agc ggc atc gac gtc gca ttc tcc gaa   6048
Val Ala Arg Asp Val Leu Asp Ser Gly Ile Asp Val Ala Phe Ser Glu
    1495   1500   1505

cgc atg cac gtc gac cac gga ttc gcc caa gca ctc caa ttg ctg gtc   6096
Arg Met His Val Asp His Gly Phe Ala Gln Ala Leu Gln Leu Leu Val
1510   1515   1520   1525

gga tcg atc acc gcc gtg ccg acc gtg ccg atc ttc atc aat tcg gtc   6144
Gly Ser Ile Thr Ala Val Pro Thr Val Pro Ile Phe Ile Asn Ser Val
                1530   1535   1540

gcc gaa ccg ctc ggc ccg gtc agc cgg gta cgg ctg ctc ggc gag gcg   6192
Ala Glu Pro Leu Gly Pro Val Ser Arg Val Arg Leu Leu Gly Glu Ala
        1545   1550   1555

gtc ggg cgg gcc gct gcc aag ctg gac aag cgt gtg ctg ttc gtc gga   6240
Val Gly Arg Ala Ala Ala Lys Leu Asp Lys Arg Val Leu Phe Val Gly
    1560   1565   1570

tcc ggc ggc ctg tcc cac gac ccg ccg gtc ccg cag ttc gcc acc gcg   6288
Ser Gly Gly Leu Ser His Asp Pro Pro Val Pro Gln Phe Ala Thr Ala
    1575   1580   1585

cca gag gaa gtg cgc gag cgg ttg atc gac ggc cgc aat ccc agt gcc   6336
Pro Glu Glu Val Arg Glu Arg Leu Ile Asp Gly Arg Asn Pro Ser Ala
1590   1595   1600   1605

9

```
gcc gaa cgt gat gcc cgc gaa cag cgc gtc atc acc gcc ggg cgg gac     6384
Ala Glu Arg Asp Ala Arg Glu Gln Arg Val Ile Thr Ala Gly Arg Asp
        1610                    1615                    1620

ttc gcc gcc ggc acc gcc gcc atc cag cca ctg aac ccc gaa tgg gac     6432
Phe Ala Ala Gly Thr Ala Ala Ile Gln Pro Leu Asn Pro Glu Trp Asp
        1625                    1630                    1635

cgg cac ctg ctc gac gtc ctc gcc tcc ggc gac ctc gag cag atc gac     6480
Arg His Leu Leu Asp Val Leu Ala Ser Gly Asp Leu Glu Gln Ile Asp
        1640                    1645                    1650

gcg tgg acc aac gac tgg ttc gtc gaa cag gcc gga cac tcc tcc cac     6528
Ala Trp Thr Asn Asp Trp Phe Val Glu Gln Ala Gly His Ser Ser His
    1655                    1660                    1665

gaa gtg cgc acc tgg atc gcc gcg tac gcg gca atg agc gcc gcc ggg     6576
Glu Val Arg Thr Trp Ile Ala Ala Tyr Ala Ala Met Ser Ala Ala Gly
1670                    1675                    1680                1685

aag tac cgc gtc acc tcg acc ttc tac cgc gaa atc cac gag tgg ata     6624
Lys Tyr Arg Val Thr Ser Thr Phe Tyr Arg Glu Ile His Glu Trp Ile
            1690                    1695                    1700

gca gga ttc ggg att act acc gcc gtc gcc gtc gac gaa tag             6666
Ala Gly Phe Gly Ile Thr Thr Ala Val Ala Val Asp Glu
        1705                    1710                    1715

accccgccgc tcccgccccg cagtcccaac gaagggtggc cccggatgac ctccgtccgc 6726

ccgtgctcgc cgtcggtgaa cgcgggctgg tcggtgggca ggaagacctc atcgccgaca 6786

tcgccctcga cctcgcagct cgtcagtagg aatgcgcacg gccgacgag tcgcgctggt 6846

caccggggcc agccgcggca tcggggcggc catcgcagat gcggtggccg cctccggtgc 6906

cgccgtaatc gtccactacg gatccgatcg gacggccgcc gctgcggtgt cgacggcatc 6966

acggctgccg ggggcctcgc ggctgcggtc caggccgacc tgtcccgacc cgaggggcct 7026

gaagagctga tgcgggagtt cgactccgcg ctcgacggtc tcgggctcga ccgagggctc 7086

gacatcctcg tcaacaacgc cggaatcagt cggcgcggag cgctcgagcg cgtcactgtc 7146

gaggatttcg accgtctggt cgcactcaac cagcgcgccc cgttcttcgt gactcggcat 7206

gccctgcccc ggatgcacga cggcggtcgc atcgtcaaca tttcctccgg atccgcccgc 7266

tacgccagac ccgacgtcat cagctacgcc atgaccaagg gggcgatcga ggtgctcacc 7326

cgcgccctcg ccgtagacgt cggcgaacga ggcatcaccg ccaacgccgt ggcgccggcc 7386

gcgctcgata ccgacatgaa cgcgcactgg cttcgcggtg acgaccatgc ccgcaccacc 7446

gccgcgtcca ccactgcact gcgaaaactc gccaccgcgg aggacatcgc cgcgatcgtg 7506

gccttcctcg tcagcgccgc cgccggtgcg atcaccgggc aggtcatcga cgccaccaac 7566
```

ggcaaccggc tctaaccaga acttacccgg tccc

<210> 2
<211> 247
<212> PRT
<213> Rhodococcus sp.

<400> 2

```
Met Thr Thr Thr Asp Thr Gly Pro Lys Pro Gly Ser Glu Ala Ala
1               5                   10                  15
Ala Leu Leu Ala Asn Val Arg Thr Ser Gly Ala Arg Leu Ser Ser Ala
            20                  25                  30
Leu Tyr Asp Ile Leu Lys Asn Arg Leu Leu Glu Gly Arg Tyr Ala Ala
        35                  40                  45
Gly Glu Lys Ile Val Val Glu Ser Ile Arg Gln Glu Phe Gly Val Ser
    50                  55                  60
Lys Gln Pro Val Met Asp Ala Leu Arg Arg Leu Ser Ser Asp Lys Leu
    65                  70                  75
Val His Ile Val Pro Gln Val Gly Cys Glu Val Val Ser Tyr Ala Pro
80                  85                  90                  95
Arg Glu Val Glu Asp Phe Tyr Thr Leu Phe Gly Gly Phe Glu Gly Thr
                100                 105                 110
Ile Ala Ala Val Ala Ala Ser Arg Arg Thr Glu Ala Gln Leu Leu Glu
            115                 120                 125
Leu Asp Leu Ile Ser Ala Arg Val Asp Ala Leu Ile Thr Ser His Asp
        130                 135                 140
Pro Val Val Arg Ala Arg Gly Tyr Arg Val His Asn Arg Glu Phe His
    145                 150                 155
Ala Ala Ile His Ala Met Ala His Ser Arg Ile Met Glu Glu Thr Ser
160                 165                 170                 175
Gln Arg Met Trp Asp Leu Ser Asp Phe Leu Ile Asn Thr Thr Gly Ile
                180                 185                 190
Thr Asn Pro Leu Ser Ser Ala Leu Pro Asp Arg Gln His Asp His His
            195                 200                 205
Glu Ile Thr Glu Ala Ile Arg Asn Arg Asp Ala Ala Ala Ala Arg Glu
        210                 215                 220
Ala Met Glu Arg His Ile Val Gly Thr Ile Ala Val Ile Arg Asp Glu
    225                 230                 235
Ser Asn Ala Gln Leu Pro Ser
240                 245
```

<210> 3
<211> 515
<212> PRT
<213> Rhodococcus sp.

<400> 3

```
Val Leu Pro Leu Glu Asp Ser Pro Glu Asn Pro Ser Arg Thr Ser
1               5                   10                  15
Pro Glu Glu Arg Ser Gly His Asp Asp Arg Phe Ala Arg Ile Val Leu
            20                  25                  30
Arg Gly Thr Ser Pro Leu Pro Pro Thr Asp Arg Gly Ser Pro Thr Val
        35                  40                  45
Ser Thr Thr Pro Thr Ser Pro Thr Lys Thr Ser Pro Leu Arg Val Ala
    50                  55                  60
```

11

```
Met Ala Ser Phe Ile Gly Thr Thr Val Glu Tyr Tyr Asp Phe Phe Ile
    65                  70                  75
Tyr Gly Thr Ala Ala Ala Leu Val Phe Pro Glu Leu Phe Phe Pro Asp
80                  85                  90                  95
Val Ser Ser Ala Ile Gly Ile Leu Leu Ser Phe Ala Thr Phe Ser Val
                100                 105                 110
Gly Phe Leu Ala Arg Pro Leu Gly Gly Ile Val Phe Gly His Phe Gly
            115                 120                 125
Asp Arg Val Gly Arg Lys Gln Met Leu Val Ile Ser Leu Val Gly Met
            130                 135                 140
Gly Ser Ala Thr Val Leu Met Gly Leu Leu Pro Gly Tyr Ala Gln Ile
    145                 150                 155
Gly Ile Ala Ala Pro Ile Leu Leu Thr Leu Leu Arg Leu Val Gln Gly
160                 165                 170                 175
Phe Ala Val Gly Gly Glu Trp Gly Gly Ala Thr Leu Met Ala Val Glu
                180                 185                 190
His Ala Pro Thr Ala Lys Lys Gly Phe Phe Gly Ser Phe Ser Gln Met
            195                 200                 205
Gly Ala Pro Ala Gly Thr Ser Val Ala Thr Leu Ala Phe Phe Ala Val
    210                 215                 220
Ser Gln Leu Pro Asp Glu Gln Phe Leu Ser Trp Gly Trp Arg Leu Pro
    225                 230                 235
Phe Leu Phe Ser Ala Val Leu Ile Val Ile Gly Leu Phe Ile Arg Leu
240                 245                 250                 255
Ser Leu Ala Glu Ser Pro Asp Phe Ala Glu Val Lys Ala Gln Ser Ala
                260                 265                 270
Val Val Arg Met Pro Ile Ala Glu Ala Phe Arg Lys His Trp Lys Glu
            275                 280                 285
Ile Leu Leu Ile Ala Gly Thr Tyr Leu Ser Gln Gly Val Phe Ala Tyr
    290                 295                 300
Ile Cys Met Ala Tyr Leu Val Ser Tyr Gly Thr Thr Val Ala Gly Ile
    305                 310                 315
Ser Arg Thr Phe Ala Leu Ala Gly Val Phe Val Ala Gly Ile Val Ala
320                 325                 330                 335
Val Leu Leu Tyr Leu Val Phe Gly Ala Leu Ser Asp Thr Phe Gly Arg
            340                 345                 350
Lys Thr Met Tyr Leu Leu Gly Ala Ala Ala Met Gly Val Val Ile Ala
            355                 360                 365
Pro Ala Phe Ala Leu Ile Asn Thr Gly Asn Pro Trp Leu Phe Met Ala
    370                 375                 380
Ala Gln Val Leu Val Phe Gly Ile Ala Met Ala Pro Ala Ala Gly Val
385                 390                 395
Thr Gly Ser Leu Phe Thr Met Val Phe Asp Ala Asp Val Arg Tyr Ser
400                 405                 410                 415
Gly Val Ser Ile Gly Tyr Thr Ile Ser Gln Val Ala Gly Ser Ala Phe
        420                 425                 430

Ala Pro Thr Ile Ala Thr Ala Leu Tyr Ala Ser Thr Asn Thr Ser Asn
        435                 440                 445
Ser Ile Val Thr Tyr Leu Leu Ile Val Ser Ala Ile Ser Ile Val Ser
    450                 455                 460
Val Ile Leu Leu Pro Gly Gly Trp Gly Arg Lys Gly Ala Ala Ser Gln
465                 470                 475
Leu Thr Arg Asp Gln Ala Thr Ser Thr Pro Lys Met Pro Asp Thr Glu
480                 485                 490                 495
Thr Phe Ser Thr Arg Thr Val Pro Asp Thr Ala Ala Ser Leu Arg Val
        500                 505                 510
```

12

Leu Asp Lys
            515

<210> 4
<211> 638
<212> PRT
<213> Rhodococcus sp.

<400> 4
  Val Met Thr Asp Met Ser Asp His Asp Arg Thr Ser Tyr Asp Thr
   1   5   10   15
Asp Val Val Ile Val Gly Leu Gly Pro Ala Gly Gly Thr Ala Ala Leu
             20   25   30
Ala Leu Ala Ser Tyr Gly Ile Arg Val His Ala Val Ser Met Phe Pro
         35   40   45
Trp Val Ala Asn Ser Pro Arg Ala His Ile Thr Asn Gln Arg Ala Val
     50   55   60
Glu Val Leu Arg Asp Leu Gly Val Glu Asp Glu Ala Arg Asn Tyr Ala
 65   70   75
Thr Pro Trp Asp Gln Met Gly Asp Thr Leu Phe Thr Thr Ser Leu Ala
 80   85   90   95
Gly Glu Glu Ile Val Arg Met Gln Thr Trp Gly Thr Gly Asp Ile Arg
                100   105   110
Tyr Gly Asp Tyr Leu Ser Gly Ser Pro Cys Thr Met Leu Asp Ile Pro
             115   120   125
Gln Pro Leu Met Glu Pro Val Leu Ile Lys Asn Ala Ala Glu Arg Gly
         130   135   140
Ala Val Ile Ser Phe Asn Thr Glu Tyr Leu Asp His Ala Gln Asp Glu
     145   150   155
Asp Gly Val Thr Val Arg Phe Arg Asp Val Arg Ser Gly Thr Val Phe
 160   165   170   175
Thr Gln Arg Ala Arg Phe Leu Leu Gly Phe Asp Gly Ala Arg Ser Lys
             180   185   190
Ile Ala Glu Gln Ile Gly Leu Pro Phe Glu Gly Glu Leu Ala Arg Ala
         195   200   205
Gly Thr Ala Tyr Ile Leu Phe Asn Ala Asp Leu Ser Lys Tyr Val Ala
     210   215   220
His Arg Pro Ser Ile Leu His Trp Ile Val Asn Ser Lys Ala Gly Phe
 225   230   235
Gly Glu Ile Gly Met Gly Leu Leu Arg Ala Ile Arg Pro Trp Asp Gln
 240   245   250   255
Trp Ile Ala Gly Trp Gly Phe Asp Met Ala Asn Gly Glu Pro Asp Val
             260   265   270
Ser Asp Asp Val Val Leu Glu Gln Ile Arg Thr Leu Val Gly Asp Pro
         275   280   285
His Leu Asp Val Glu Ile Val Ser Arg Ser Phe Trp Tyr Val Asn Arg
     290   295   300
Gln Trp Ala Glu His Tyr Gln Ser Gly Arg Val Phe Cys Gly Gly Asp
 305   310   315

Ala Val His Arg His Pro Pro Ser Ser Gly Leu Gly Ser Asn Thr Ser
 320   325   330   335
Met Gln Asp Ala Phe Asn Leu Ala Trp Lys Ile Ala Phe Val Val Lys
             340   345   350
Gly Tyr Ala Gly Pro Gly Leu Leu Glu Ser Tyr Ser Pro Glu Arg Val
         355   360   365

13

Pro Val Gly Lys Gln Ile Val Ala Arg Ala Asn Gln Ser Arg Lys Asp
        370   375   380
Tyr Ala Gly Leu Arg Glu Trp Phe Asp His Glu Ser Asp Asp Pro Val
        385   390   395
Ala Ala Gly Leu Ala Lys Leu Lys Glu Pro Ser Ser Glu Gly Val Ala
    400   405   410   415
Leu Arg Glu Arg Leu Tyr Glu Ala Leu Glu Val Lys Asn Ala Glu Phe
                420   425   430
Asn Ala Gln Gly Val Glu Leu Asn Gln Arg Tyr Thr Ser Ser Ala Val
        435   440   445
Val Pro Asp Pro Glu Ala Gly Glu Glu Val Trp Val Arg Asp Arg Glu
        450   455   460
Leu Tyr Leu Gln Ala Thr Thr Arg Pro Gly Ala Lys Leu Pro His Ala
        465   470   475
Trp Leu Val Gly Ala Asp Gly Thr Arg Ile Ser Thr Leu Asp Val Thr
    480   485   490   495
Gly Lys Gly Met Met Thr Leu Leu Thr Gly Leu Gly Gly Gln Ala Trp
                500   505   510
Lys Arg Ala Ala Ala Lys Leu Asp Leu Pro Phe Leu Arg Thr Val Val
        515   520   525
Val Gly Glu Pro Gly Thr Ile Asp Pro Tyr Gly Tyr Trp Arg Arg Val
        530   535   540
Arg Asp Ile Asp Glu Ala Gly Ala Leu Leu Val Arg Pro Asp Gly Tyr
    545   550   555
Val Ala Trp Arg His Ser Ala Pro Val Trp Asp Asp Thr Glu Ala Leu
    560   565   570   575
Thr Ser Leu Glu Asn Ala Leu Thr Ala Val Leu Asp His Ser Ala Ser
                580   585   590
Asp Asn Gly Asn Pro Ser Gly Thr Asn Glu Pro Gln Tyr Ser Thr Arg
        595   600   605
Ala Val Pro Ile Val Val Pro His Val Thr Ala Glu Asp Ala Ala Pro
        610   615   620
Ala Ser Ala Thr Arg Thr Thr Thr Val Glu Gly Glu Asn Arg
    625   630   635

<210> 5
<211> 315
<212> PRT
<213> Rhodococcus sp.

<400> 5
Met Pro Val Ala Leu Cys Ala Met Ser His Ser Pro Leu Met Gly
    1   5   10   15
Arg Asn Asp Pro Glu Gln Glu Val Ile Asp Ala Val Asp Ala Ala Phe
                20   25   30
Asp His Ala Arg Arg Phe Val Ala Asp Phe Ala Pro Asp Leu Ile Val
        35   40   45
Ile Phe Ala Pro Asp His Tyr Asn Gly Val Phe Tyr Asp Leu Leu Pro
        50   55   60
Pro Phe Cys Ile Gly Ala Ala Ala Gln Ser Val Gly Asp Tyr Gly Thr
    65   70   75
Glu Ala Gly Pro Leu Asp Val Asp Arg Asp Ala Ala Tyr Ala Val Ala
    80   85   90   95
Arg Asp Val Leu Asp Ser Gly Ile Asp Val Ala Phe Ser Glu Arg Met
                100   105   110
His Val Asp His Gly Phe Ala Gln Ala Leu Gln Leu Leu Val Gly Ser
        115   120   125

14

```
Ile Thr Ala Val Pro Thr Val Pro Ile Phe Ile Asn Ser Val Ala Glu
         130                 135                 140

Pro Leu Gly Pro Val Ser Arg Val Arg Leu Leu Gly Glu Ala Val Gly
         145                 150                 155
Arg Ala Ala Ala Lys Leu Asp Lys Arg Val Leu Phe Val Gly Ser Gly
160                 165                 170                 175
Gly Leu Ser His Asp Pro Pro Val Pro Gln Phe Ala Thr Ala Pro Glu
         180                 185                 190
Glu Val Arg Glu Arg Leu Ile Asp Gly Arg Asn Pro Ser Ala Ala Glu
         195                 200                 205
Arg Asp Ala Arg Glu Gln Arg Val Ile Thr Ala Gly Arg Asp Phe Ala
         210                 215                 220
Ala Gly Thr Ala Ala Ile Gln Pro Leu Asn Pro Glu Trp Asp Arg His
225                 230                 235
Leu Leu Asp Val Leu Ala Ser Gly Asp Leu Glu Gln Ile Asp Ala Trp
240                 245                 250                 255
Thr Asn Asp Trp Phe Val Glu Gln Ala Gly His Ser Ser His Glu Val
         260                 265                 270
Arg Thr Trp Ile Ala Ala Tyr Ala Ala Met Ser Ala Ala Gly Lys Tyr
         275                 280                 285
Arg Val Thr Ser Thr Phe Tyr Arg Glu Ile His Glu Trp Ile Ala Gly
         290                 295                 300
Phe Gly Ile Thr Thr Ala Val Ala Val Asp Glu
305                 310                 315
```

```
<210> 6
<211> 7599
<212> DNA
<213> Rhodococcus sp.

<220>
<221> CDS
<222> (4717)..(5586)
<223> ohpC hydrolase

<400> 000
```

```
                                    atg acc cgt cct tac acc    4734
                                    Met Thr Arg Pro Tyr Thr
                                    1                   5

agc gtc tgg gac gac ctg aac cag gtc gag ttc agc cag gga ttc atc    4782
Ser Val Trp Asp Asp Leu Asn Gln Val Glu Phe Ser Gln Gly Phe Ile
             10                  15                  20

cag gcc ggc ccc tac cgg acc cga tac ctg cac gcc ggc gat tcg tcc    4830
Gln Ala Gly Pro Tyr Arg Thr Arg Tyr Leu His Ala Gly Asp Ser Ser
         25                  30                  35

aag ccc acg ctg atc ctg ctg cac ggc atc acc ggc cac gcc gag gcg    4878
Lys Pro Thr Leu Ile Leu Leu His Gly Ile Thr Gly His Ala Glu Ala
         40                  45                  50
```

```
tac gtg cgc aat ctg cgc tcg cat tcc gag cac ttc aac gtc tgg gca    4926
Tyr Val Arg Asn Leu Arg Ser His Ser Glu His Phe Asn Val Trp Ala
 55              60                  65                      70

atc gac ttc atc ggc cac ggc tat tcg acc aag ccc gac cac ccg ctc    4974
Ile Asp Phe Ile Gly His Gly Tyr Ser Thr Lys Pro Asp His Pro Leu
             75              80                      85

gag atc aag cac tac atc gac cac gtg ctg cag ttg ctg gac gcc atc    5022
Glu Ile Lys His Tyr Ile Asp His Val Leu Gln Leu Leu Asp Ala Ile
             90              95                 100

ggc gtc gag aag gcc tcg ttt tcc ggg gag tct ctc ggc ggt tgg gtc    5070
Gly Val Glu Lys Ala Ser Phe Ser Gly Glu Ser Leu Gly Gly Trp Val
            105             110                 115

acc gcc cag ttc gcg cac gac cat ccc gag aag gtc gac cgg atc gtg    5118
Thr Ala Gln Phe Ala His Asp His Pro Glu Lys Val Asp Arg Ile Val
            120             125                 130

ctc aac acc atg ggc ggc acc atg gcc aac cct cag gtg atg gaa cgt    5166
Leu Asn Thr Met Gly Gly Thr Met Ala Asn Pro Gln Val Met Glu Arg
135             140                 145                 150

ctc tat acc ctg tcg atg gaa gcg gcg aag gac ccg agc tgg gaa cgc    5214
Leu Tyr Thr Leu Ser Met Glu Ala Ala Lys Asp Pro Ser Trp Glu Arg
                155             160                 165

gtc aaa gca cgc ctc gaa tgg ctc atg gcc gac ccg acc atg gtc acc    5262
Val Lys Ala Arg Leu Glu Trp Leu Met Ala Asp Pro Thr Met Val Thr
            170             175                 180

gac gac ctg atc cgc acc cgc cag gcc atc ttc cag cag ccg gat tgg    5310
Asp Asp Leu Ile Arg Thr Arg Gln Ala Ile Phe Gln Gln Pro Asp Trp
            185             190                 195

ctc aag gcc tgc gag atg aac atg gca ctg cag gac ctc gaa acc cgc    5358
Leu Lys Ala Cys Glu Met Asn Met Ala Leu Gln Asp Leu Glu Thr Arg
200             205                 210

aag cgg aac atg atc acc gac gcc act ctc aac ggc atc acg gtg ccc    5406
Lys Arg Asn Met Ile Thr Asp Ala Thr Leu Asn Gly Ile Thr Val Pro
215             220                 225                 230

gcg atg gtg ctg tgg acc acc aag gac ccc tcc ggt ccg gtc gac gaa    5454
Ala Met Val Leu Trp Thr Thr Lys Asp Pro Ser Gly Pro Val Asp Glu
            235             240                 245

gcc aag cgc atc gcc tcc cac atc ccg ggc gcc aag ctg gcc atc atg    5502
Ala Lys Arg Ile Ala Ser His Ile Pro Gly Ala Lys Leu Ala Ile Met
            250             255                 260

gag aac tgt ggc cac tgg ccc cag tac gag gac ccc gag acc ttc aac    5550
Glu Asn Cys Gly His Trp Pro Gln Tyr Glu Asp Pro Glu Thr Phe Asn
265             270                 275
```

16

```
aag ctg cat ctg gac ttc ctc ctc ggt cgc agc tga                          5596
Lys Leu His Leu Asp Phe Leu Leu Gly Arg Ser
    280                 285                 290
```

<210> 7
<211> 289
<212> PRT
<213> Rhodococcus sp.

<400> 7

```
Met Thr Arg Pro Tyr Thr Ser Val Trp Asp Asp Leu Asn Gln Val Glu
1               5                   10                  15
Phe Ser Gln Gly Phe Ile Gln Ala Gly Pro Tyr Arg Thr Arg Tyr Leu
            20                  25                  30
His Ala Gly Asp Ser Ser Lys Pro Thr Leu Ile Leu Leu His Gly Ile
        35                  40                  45
Thr Gly His Ala Glu Ala Tyr Val Arg Asn Leu Arg Ser His Ser Glu
    50                  55                  60
His Phe Asn Val Trp Ala Ile Asp Phe Ile Gly His Gly Tyr Ser Thr
65                  70                  75                  80
Lys Pro Asp His Pro Leu Glu Ile Lys His Tyr Ile Asp His Val Leu
            85                  90                  95
Gln Leu Leu Asp Ala Ile Gly Val Glu Lys Ala Ser Phe Ser Gly Glu
            100                 105                 110
Ser Leu Gly Gly Trp Val Thr Ala Gln Phe Ala His Asp His Pro Glu
        115                 120                 125
Lys Val Asp Arg Ile Val Leu Asn Thr Met Gly Gly Thr Met Ala Asn
    130                 135                 140
Pro Gln Val Met Glu Arg Leu Tyr Thr Leu Ser Met Glu Ala Ala Lys
145                 150                 155                 160
Asp Pro Ser Trp Glu Arg Val Lys Ala Arg Leu Glu Trp Leu Met Ala
            165                 170                 175
Asp Pro Thr Met Val Thr Asp Asp Leu Ile Arg Thr Arg Gln Ala Ile
            180                 185                 190
Phe Gln Gln Pro Asp Trp Leu Lys Ala Cys Glu Met Asn Met Ala Leu
        195                 200                 205
Gln Asp Leu Glu Thr Arg Lys Arg Asn Met Ile Thr Asp Ala Thr Leu
    210                 215                 220
Asn Gly Ile Thr Val Pro Ala Met Val Leu Trp Thr Thr Lys Asp Pro
225                 230                 235                 240
Ser Gly Pro Val Asp Glu Ala Lys Arg Ile Ala Ser His Ile Pro Gly
            245                 250                 255
Ala Lys Leu Ala Ile Met Glu Asn Cys Gly His Trp Pro Gln Tyr Glu
            260                 265                 270
Asp Pro Glu Thr Phe Asn Lys Leu His Leu Asp Phe Leu Leu Gly Arg
    275                 280                 285
Ser
```

<210> 8
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial
      Sequence:OHPR3

<400> 8
atcgaattcg gatccatgac caccacc   27

<210> 9
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial
      Sequence:OHPR4

<400> 9
atcgcggccg ctctagacta actgcagggc gccaagctcg gcag   44

<210> 10
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial
      Sequence:C11

<400> 10
atcgaattcg gatccacgag agag   24

<210> 11
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial
      Sequence:C12

<400> 11
atccggccgc gctctagagt acgcaagct   29

<210> 12
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial
      Sequence:op1

<400> 12
atcctcgaga ccccgatacc   20

<210> 13
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial
     Sequence:op2

<400> 13
atcgtcgacc gctaccc   17

<210> 14
<211> 54
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial
     Sequence:CaMVop2

<400> 14
tccactgacg taagggatga cgcacaatcc cactatcctt cgcaagaccc   50

<210> 15
<211> 99
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial
     Sequence:CaMVop3

<400> 15
atgctagacg tctagttcag acgctactta tatagaggaa gggtcttgcg   50

<210> 16
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial
     Sequence:CaMVop4

<400> 16
cgtctagcat tctagttgag gaagttcatt tcatttggag aggac   45

<210> 17
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial
      Sequence:CaMVopF1

<400> 17
atcgatatct ccactgacgt aag   23

<210> 18
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial
      Sequence:CaMVopR1

<400> 18
gatggatccg tcctctccaa atga   24

<210> 19
<211> 470
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:chimaeric
      promoter

<400> 19
catgcctgca ggtcaacatg gtggagcacg acactctcgt ctactccaag aatatcaaag 60
atacagtctc agaagaccag agggctattg agacttttca acaaagggta atatcgggaa 120
acctcctcgg attccattgc ccagctatct gtcacttcat cgaaaggaca gtagaaaagg 180
aagatggctt ctacaaatgc catcattgcg ataaggaaa ggctatcgtt caagaatgcc 240
tctaccgaca gtggtcccaa agatgtaccc ccacccacga ggaacatcgt ggaaaaagaa 300
gacgttccaa ccacgtcttc aaagcaagtg gattgatgtg atatctccac tgacgtaagg 360
gatgacgcac aatcccacta tccttcgcaa gacccttcct ctatataagt agcgtctgaa 420
ctagacgtct agcattctag ttgaggaagt tcatttcatt tggagaggac 470